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COAST DEFENSE.

fense is summed up in the report of the board of ordnance and fortifications, signed by Gen. Milnes, Cols. common routes for vessels of both countries. It is esti-Frank and Jaynes, Major Phipps, and Messrs. Outhwaite and Ayer. The report states that under the increased appropriations of the present fiscal year, the carried from Duluth and put on board the ocean work of placing our harbors in a proper state of de- steamers at Montreal. fense is making good progress, and if only the same sums are appropriated annually for a few years our principal ports will present a formidable front to an attacking fleet. It is hoped, however, that even more liberal appropriations will be made in order that we soon make application to the war department at Wash- yards, the shipping bounty is enough to defray the may soon be ready for any emergency that may arise. ington to have the government become guardian of the greater part of their cost.

China, with undefended ports and an inadequate navy, was defeated in a few months. In the last war between the great military powers of Germany and France, the surrender at Sedan occurred only forty days after the declaration of war. The wars of nations occur in cycles of varying length, but seldom does a generation pass without a great conflict. Already more than thirty years have elapsed since our last great war, and another may soon, if the past be a guide to the future, terminate one of the longest intervals of peace we have ever enjoyed. Our engineer department is ready with modern plans for fortifications, and our ordnance department is prepared with designs for guns and carriages that are equal to any in the world. If Congress will but increase the appropriation to the capacity of those departments for useful and economical work, it will not be long before our coasts are secure against the attack of foreign powers. An effective preparation for war is the best safeguard against war.

The foregoing summary closes an exhaustive report giving every detail of the progress of fortification, the examination of innumerable devices of attack and defense, the testing of guns, gun carriages, powders, arms, mortars, armor, etc. A long list is given of devices which have been examined and not approved, and a smaller list of those approved or under consideration. The report contains a letter from Secretary Lamont in which he points out that the board was created at a time when Congress was taking the first step in the execution of a project that involved an ultimate expenditure of more than \$100,000,000, the purpose being to have a body of experts to pass on the advancing stages of armament. Recent years, the secretary writes, had witnessed a rapid evolution in war material. Foreign

Costly material had been manufactured; much of it to time there have been encroachments upon the original made Conneaut a visit last week for the purpose of inbe thrown away as defective, or because out-classed by established dock lines, and this action is taken to pre- spection, and to make preparations for a new light on superior inventions on the part of a possible enemy. vent further extensions of docks into the river. At the west pier. The new light-house will be similar to Mr. Lamont suggested that the work would be expe- the last meeting of the common council the city en- the one now under construction at Ashtabula. The dited if the board established certain definite "types of gineer was instructed to make a complete map of the framework will have a foundation of piles. The tower implements and engines of war." In answer to this, the harbor lines. This will be filed with the War Depart- will be 75 feet above the level of the water. Col. Smith board specifies a list of "implements and engines of war for which satisfactory types have been determined." The work as done at the various gunworks and arsenals is reviewed in detail.

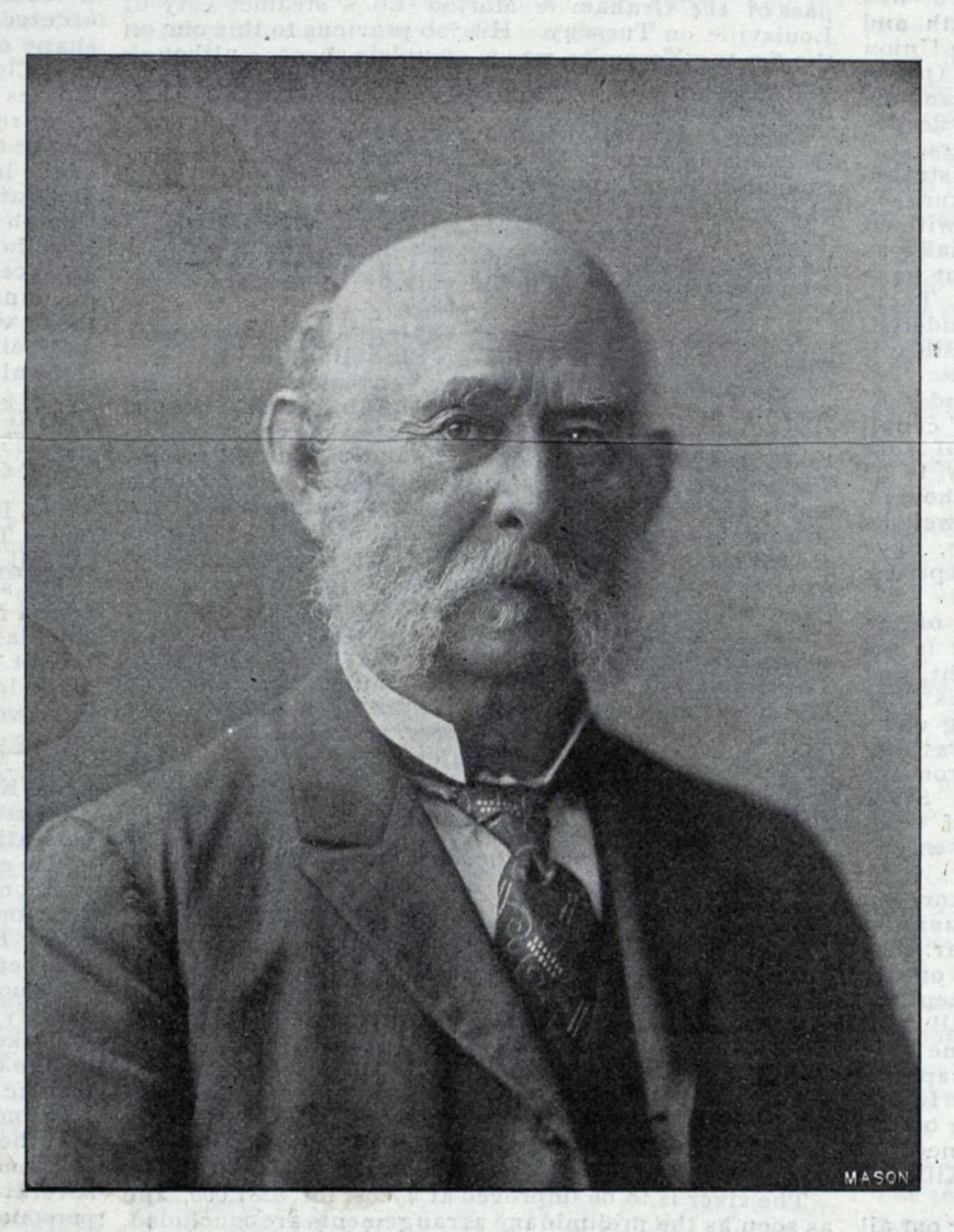
CANADIAN CANALS.

Canada has expended \$50,000,000 on her canals, and is now considering the question of deepening the St.

Lawrence waterways to 21 feet. Premier Laurier The work of placing our harbors in a state of de- thinks the deepening of the canals should be done jointly by the United States and Canada, inasmuch as they are mated that if the river and canals between Montreal and Lake Erie were deepened to 21 feet, grain could be

TO DEFINE HARBOR LINES.

The port of Sheboygan, Wis, on Lake Michigan, will



JAMES A. DUMONT, SUPERVISING INSPECTOR GENERAL OF THE STEAMBOAT INSPECTION SERVICE. (See Biographical Sketch on Page 6.)

ner as now prevails at the larger take ports.

MERCANTILE MARINE OF FRANCE.

In 1895 the total number of vessels belonging to the French mercantile marine was 14,386 sailing vessels of a total tonnage of 386,510 tons, and 1,212 steamers of an aggregate of 500,568 tons, or a total of 15,598 vessels representing 887,078 tons. There is at present in France, a tendency to work very large sailing vessels; a shipping firm, which already owns a considerable number, has given an order for another group, and it is said that other firms intend to follow their example. These vessels pay well for many reasons, mainly because, as soon as they are launched from French dock-

> As regards steam vessels, there were, in 1895, 1,212 vessels manned by 14,582 sailors and 7,353 engineers, firemen and stokers, and representing an aggregate of 500,568 tons. There is a marked progress here. In 1880 the total tonnage of steamers was but 277,759 tons; but the figures steadily rose from that year, attaining a culminating point in 1891 with 521,872 tons, but falling to 491,972 tons in 1894, to rise again to something over 500,000 tons in 1895. Of the 1,212 vessels, 170, manned by 10,116 men, are employed in ocean navigation; the remainder are for coasting purposes and use in the home ports. It the movement in shipping be considered more in detail, it is seen that the French flag embraces four millions of tons in entries and as much more in clearances.

> The share of the French flag in the entries and clearances of French ports in 1895 was but 35 per cent., and yet this shows an improvement over 1894, which was only 33.8 per cent.—the lowest percentage registered since 1880. From 35 per cent. in 1880 it rose regularly to 41.3 in 1887 and 1889, and then fell again as regularly till 1894. It now shows a tendency to improve; but great efforts have still to be made, and when it is remembered that a portion of the French tonnage in entries and clearances is represented by subsidized postal vessels, by fishing vessels which receive state bounties, and by others engaged in the coasting trade and the Francc-Algerian service, and which have nothing to fear from foreign competition, it is easy to see that the effort re- quired to maintain this improvement is considerable.

NEW AIDS AT CONNEAUT.

Col. Jared A. Smith, Corps of Engineers, nations had armed and re-armed at short intervals harbor confines within the city limits. From time to U.S. A., and Supt. Seeley, of light-house construction, ment, and hereafter any encroachments will become an states that the material has all been ordered, and work offense which the government can punish. It is to be will be commenced early next month, and the work will hoped that other ports will also make application to the probably be completed about January 1. Col. Smith War Department for a proper configuration of the har- also says that early in the spring the work of building bor lines so that the increasing commerce of the present the two oblique breakwaters will be begun. When and the much greater trade of the future will not be these are finished and also the work Mr. Carnegie inhampered for room on reaching port, in the same man- tends to do, it will make Conneaut as fine a harbor as there is on the Great Lakes.

NEWS AROUND THE LAKES.

BUFFALO, N. Y.

Special Correspondence to The Marine Recora.

Seaboard is a trifle wild when it states that the Wallula was rebuilt in 1892 at a cost of nearly \$200,000. Somebody has been lavish in the use of cyphers. The

Wallula was valued at only \$70,000.

The plan to float the stranded barge C. L. Young off the reef at the mouth of the harbor has not worked yet, and she is hanging on there yet, with the captain not willing to let the lumber be taken out of the hold lest the boat should refuse to float after that. It must be pleasant to the owner of the lumber to wait so long for his goods.

Only a few of the lumber boats are going up after loads now. The Curtis tow is about all that has gone out of here for some days. The Ogemaw tow is here with final loads. Had lumbermen been eager enough for more stock they could have got boats by raising the

freight, but this they failed to do.

It is a good deal to be able to note that the Union Dry-Dock is to fall into line again with a new 500-foot dock. It will be built right away, and adjoining the others and ought to be ready for next season. A dock less than 400 feet long is a plaything these days, but it ought to be sometime before the fleet outgrows a 500-foot one.

Coal freights made a jump to 60 cents to Lake Michigan and 50 cents to Lake Superior, much to the astonishment of the general marine public. It appears that there was a scarcity of boats all at once and rather more coal was discovered than had been looked for, so quite a fleet was put in. This ought to make business

more lively this week than was anticipated. Then if present plans work the Union yard will launch the Standard Oil barge in about a month and begin work on a duplicate of the Ramapo for the Union Steamboat Co. With these two new ones, the Owego and Chemung changed over into heavy carriers and the New York and Rochester rebuilt the Union Line fleet of eight boats will take a new place among the others.

The sensation of the week was, of course, the stranding of the Union Transit Liner Moran, on Sturgeon Point, last Friday night. She got off all right, without apparent injury, but the risk was great, especially as the wind came about during Saturday and might have finished her if she had not escaped beforehand. There is no explanation of the accident. Someone blundered, of course, but who it was is not to be told. Possibly it was the compass.

Erastus Wiman, Chauncy Dutton and Alexander R. Smith are names associated with the "gigantic" canalboat combination which is to take advantage of Erie canal improvements, and which "is just ready to be floated," with steam canalboats, storage warehouses, Niagara electric power, etc. These names, as well as others referred to as promoters of this scheme, have been heard of before in connection with big enterprises,

but only in newspapers.

There is a serious casting about on the part of the line managers, to find wild boats to charter. It is not every boat that is fitted to carry package freight, and some of them are in other business. There is now much more flour than the line boats can bring down this fall, and the millers are so eager to get everything cleaned up that they are urging any departure from the usual methods that will promise to do the work. Since the election there has been a great increase of westbound freight also, so that the lines are in a fair way to be running till they freeze in.

The stranding of the steamer Moran on Sturgeon Point set line managers to speculating on the unreliability of the average sailor at this time of the year. The men, as a rule, don't care whether they go out on another trip or not, and if they have no appointment for next season to take care of they will disregard all rules of conduct till they are on board, at least. No one supposes that there was anything wrong with the captain, mate or engineer of the Moran, for they have a future at stake, but that is not saying much for some of the others. It is feared that the Moran may be in need of an inspection when she gets to Duluth, so Capt. Killeran

has gone up to look her over.

The big Corrigan barge Aurania did not take out all the coal there was at the Tifft Farm last Sunday, nor the 5,200 tons that she cleared, but she loaded 4,752 net tons on an even draft of 15 feet 41/2 inches, which is a great feat, even for a Buffalo dock, especially as the load was taken in 2½ hours. And here is Oswego boasting of loading 1,300 tons on the Monteagle the other day in 31/2 hours and wondering what Buffalo has to say to it. Well, this is what Buffalo says: The rate is Chicago. more than five times that of Oswego. The Aurania's load is by far the largest ever taken at any Buffalo coal dock and is no doubt the largest coal cargo ever loaded on the lakes. It goes to the Lehigh dock at South Chicago.

The grain cargoes gave out as the week went on, but the waiting boats did not all get to elevator for all that. They were all bunched for the Lehigh elevators and the cars gave out pretty badly and of course no other road must be allowed to touch any of them on any account, so several of them waited half a week or more. The Craig was the only one that had been in any length of time that is still waiting. But the grain season is close to the end unless Duluth starts up. Last week's

there is on the Great diskers.

receipts were considerably more than 5,000,000 bushels. which ought to be enough for the time of year.

The canal is doing its full share in carrying off the grain, having taken out over 300,000 bushels last Saturday, but this is the end of the boating season. There have been some profits, especially as the rate, though low, has been uniform all the season, with only a slight rise near the close As soon as the water can be drawn off in December the work of deepening will begin. This will be a great thing for the boatmen at once, in spite of the fact that they will not be able to build any larger boats yet. This end of the canal has always been very expensive to the boatmen, as the rock is so high in the bottom of the canal most of the way to Lockport that striking and going down is a common thing with boats carrying full loads of wheat, especially when the water is low in the lake. A boatman says that \$50,000 worth of boats and cargo has been lost or injured on this section during the present season.

JOHN CHAMBERLIN.

CHICAGO, ILL.

Special Correspondence to The Marine Record.

At Miller Bros.' shipyard the steamer Desmond was in dock for recalking all over; the tug Frank Edward was in for a new shaft and the schooner C. J. Magill is in for a new center-board box, new deck frames and new deck.

Chief Engineer W. L. Miller, who has been with Capt. A. E. Johnson on the steamer Westcott, which has gone into winter quarters, has been given the position

of chief engineer on the steamer Pueblo.

The schooner F. W. Gifford, Capt. G. E. Kohnert, and the steamer Mary McGregor are here waiting to unload their cargoes of bituminous coal at the Dunham Tow-

ing and Wrecking Co.'s new coal dock.

John Maurice, compass adjuster, adjusted the compass of the Graham & Morton Co.'s steamer City of Louisville on Tuesday. His job previous to this one on the fire tug Yosemite was a complete success, although her compass prior to adjusting deviated 16 points from its true course.

Capt. C. E. Kirtland has resigned command of the Huron Line steamer City of Fremont, and is succeeded temporarily by Capt. Michael Morgan, who had charge of the steamer A. B. Taylor. The permanent command of the City of Fremont has been tendered and accepted by Capt. James Fraser, another veteran lake navigator, who spent many years in the employ of the late Capt. E. M. Peck, of Detroit.

The large steel steamer Cresent City, now under way at the yard of the Chicago Ship Building Co., will be equipped with a quadruple expansion engine and Babcox 1,928, Wilcox boilers, guaranteed 250 pounds eteam pressure. The cylinders of the engine are to be 19, 41 and 60 inches in diameter and stroke 42 inches. The engine is to built at the shipbuilding company's works and will be the first introduced on the lakes on a

steamer of large size.

On Friday evening last the O. B. Green Dredging Co., which has the government contract for dredging the river, while at work between Fifth avenue and La Salle street, brought up with the scoop an old-fashioned safe. It was lined on the inside with wood and had a key lock. The fireman on the Yosemite examined the relic and said it undoubtedly belonged to the old steamer Globe. This steamer blew up in the river in 1861, at about the same spot where the safe was found. She had a cargo of apples, and that was lost with all the other contents of the craft. Nothing was found in the safe, which the Green company will keep as a relic. The Globe was one of the old-time side-wheelers which plied between Buffalo and Chicago, and had been converted into a screw-wheel steamer only a few seasons prior to the explosion which ended her existence.

WILLIAMS.

CLEVELAND, O.

Special Correspondence to The Marine Record.

The Yakima was in the Ship Owners' dry-dock this week, for two new blades to her propeller.

Capt. Holmes, who was master of the Wilson Liner Wallula, will probably spend the winter in Mexico. The river is to be improved at a cost of \$231,000, and

as soon as the preliminary arrangements are concluded, work will be started.

The Cleveland Ship Building Co. will build a Scotch- such offers. type boiler for the steamer Robert Wallace, to be put in during the winter. This will replace a fire-box boiler.

Capt. McQueen, who through the nervousness of his wife was reported off duty for a couple of weeks, is still keeping to windward, and is in active service out of

The manager of the Lake Michigan Car Ferry Transportation Co. denies that the tug S. M. Fisher is to be lengthened this winter. In his denial, however, he says that the Chicago Ship Building Co. will be consulted if a change is made.

The steamers Bessemer and Siemens, built by the Globe Iron Works Co. for the Rockefeller fleet, are both powerful and speedy. The Bessemer has made fourteen miles an hour light, and has been towing one of the big barges, the Nasmyth, right along at an average speed better than eleven and one-half miles.

It has been known for some time that Mr. Philip J. Minch was courting as strenuously as possible one of Cleveland's fairest daughters. Now that "the cat is

were as now provide at the larger fact corre-

out of the bag," I may announce that the genial Philip is to marry Miss Charlotte May Hansheer, and in doing so the best day's work of his life has been accomplished.

That passenger agent of the D. & C. Line is a daisy. In announcing the discontinuance of the passenger service on the Lake Huron route he has got out special cards electrotyped so as to show the "Line of the Trolley." It seems early for the D. & C. Line to close down on Lake Huron trips, but I suppose receipts qualify transportation services.

Vesselmen object to the manner in which "bridge hours" are regulated. The steamer J. J. Hill was one hour and a half passing through two bridges a few days ago. The "bridge hours" had been changed without the knowledge of the tugmen, and the captain on one bridge was working by standard time while the man in charge of the other bridge regulated himself by sun time.

The steamer Grand Traverse was sunk in a coll sion on October 19, 1896, near Colchester Reef light-house, Lake Erie. Nothing can be seen of the sunken steamer except the spars and smoke stack. Lights have been placed on the wreck by the underwriters. The wreck is a dangerous menace to navigation for it lies in the main channel of commerce. The wreck lies 11/4 miles N. 1/4 W. from Colchester Reef light-house, in 35 feet

of water.

Capt. M. J. Galvin, Supervising Inspector of steamboats for this district, which includes Buffalo and Cleveland, was in the city this week on an official tour. The captain expressed himself as being well satisfied with the business and conduct of the local office, nor do I think he could do otherwise, because Messrs. DeWolf and McGrath are among the most efficient men in the service, so far, at least, as my observation may go. Furthermore, it is not generally known that the local inspectors are now under the rules of the civil service and out of political interference so long as they properly conduct themselves. Capt. Galvin found the Cleveland officials working just as the department has ordered, and he was pleased to find everything in shipshape order at the offices here. It is sometimes said that Cleveland is too strict in the examination of candidates for licenses. I don't think so, nor would any other reasonable person. The more striet the officials can be at this time will be, as it is, for the betterment of the lake marine, and Capt. DeWolf as well as Mr. McGrath are, if anything, not yet strict enough, although it should be said in their favor that this district is without doubt the best on the lakes, or I might take an exception, perhaps, to Buffalo, where I know that examinations are strictly conducted under the locals there, viz., Captains Edward M. Marion, F. L. R. Pope, and boiler inspectors Joseph G. Schumacher and George C. Neal.

DETROIT, MICH.

Special Correspondence to The Marine Record.

The Pilgrim and Douglass will lay up on the 26th inst. They have done a fair business all season, and all fall have had heavy Lake Huron freights.

The steamer Arthur Orr ran aground on Bois Blanc Island Monday night, but was relieved without injury Tuesday forenoon by the wrecker Saginaw.

Capt. Arthur J. Fox, of the Frank E. Kirby, has again laid up his steamer. The captain, though greatly improved in health, is still not strong and his voice is very weak yet.

The Aurania struck Monday night, when passing the Lime Kiln Crossing, and is reported as having filled a compartment forward. Diver John Quinn made the ex-

amination on Tuesday afternoon.

The end of the season of 1896 is at hand, and since election many are the expressions of renewed confidence and hope among those Detroiters who have vessel property. L. C. Waldo has expressed himself as confident of a better season next year, and believes the great ore piles now encumbering the Lake Erie docks will dwindle greatly before navigation opens. Waldo A. Avery does not take such a nopeful view, and says he has decided to let the Curry remain as she is for next year. Last summer he declared his intention of lengthening her to 500 feet and building a consort 450 feet long to tow with her, the two to carry 15,000 tons of iron ore.

Thomas Adams is very sanguine, and says he has several offers of contracts for next year. Mr. Adams is personally a very pleasant and genial man to meet and it may be his personal qualities which have brought him

Parker & Millen have just closed a fairly successful season and are non-committal on next year's business. W. A. Livingstone thinks only moderate prosperity will come, and views the situation conservatively. John Stevenson has done a large business, considering the times, and looks forward to added business next year. The D. & C. Line will try to make McKinley and 1897 prove the banner year in their history. But among all vessel owners and agents there is a remarkable feeling of restored confidence. L. C. Waldo, in telling THE RECORD something about what he looked forward to in case the Bryan principles had obtained, said: "I do not like even to admit what fears I had. That all business would have been crippled I firmly believe, and that more serious complications and dangers might have resulted was quite possible, even to open warfare. It is the greatest election, the greatest victory since the civil war."

A. G. McDonald, president of the Killarney Fish Co., will probably try to secure the office of fish commisis our paintegeth to mostagen out universities won at

whitefish catching off on October 15 practically excludes fisheries from Michigan; and then, too, fish should not be raised in a hatchery, but be allowed to grow from spawn in the natural waters where they live when grown, and some arrangements should be made for that purpose. Careful study of the fish question and much experience lead me to believe that the towing of rafts and running so many vessels kills as many fish as are caught in nets, especially whitefish and gamey fish, such as black bass and brook trout." This is certainly a novel idea and one which may some time engage the attention of vessel owners.

McCormick.

PORT HURON, MICH.

Special Correspondence to The Marine Record.

There is not very much prospect of any shipbuilding or repair work here this winter.

The schooner A. J. McBrier has been libeled, also her cargo of lath for wrecking and dry-dock bill. The days for such small vessels are a thing of the past. If she sells for enough to pay the costs of the court she will do well.

Capt. A. Hemenger, of the wrecking steamer Fern, has given up the job of raising the old wreck of the steamer S. C. Clark which is sunk in Black River at the Jenks Ship Building Co.'s yard. He has removed the boiler and engine, but has abandoned the hull.

The location for the life-saving station has caused a great deal of kicking on account of its being sent up the shore. Everyone who signed the petition signed it with the understanding that it would be on the light-house reserve, but it seems it has been located about 2½ miles from the light-house. It does not seem right to locate it up there, as the water is shoal for about 150 feet out, so that it will be a very hard matter to launch the boats.

COLLINGWOOD, ONT.

Special Correspondence to The Marine Record.

Messrs. Leslie Bros. launched a new tug at Owen Sound last Friday. The new craft has been named Allegro. She is 46 feet in length by 9 feet beam, fitted with a compound engine and a large boiler. The tug

will be engaged in fishing next season.

It is altogether likely that the people of Collingwood will witness a busy scene around the docks and the dry-dock during the ensuing winter. We learn that a number of tugs will be built, one by Messrs. Noble & Co. and another by Messrs. Ainsworth & Ganley, and that it is the intention of the G. N. Transit Co. to spend considerable money on their steamer Pacific. The hull will be overhauled and the steamer strengthened by the addition of steel arches. The dry-dock company are also figuring on a number of contracts, one for lengthening a steam barge and others for new hulls. With this work in view at the present time, the prospects for a busy season are very bright.

LAKE SHIPBUILDING.

As we have mentioned in previous issues of THE RECORD, lake shipbuilders are doing considerable figuring on new contracts, and it is almost certain that further orders will be closed before the end of the week. There will not be as much tonnage turned out this year as there was last, but all the yards will be fairly busy. The schooner which the Globe Iron Works Co. will build on their own account will be a duplicate of the Bessemer barge building at that yard. She will be 376 feet long, 46 feet beam, and 26 feet deep. She will come out early next season, and if not sold she will tow with one of the steamers managed in the office of M. A. Hanna & Co.; but it is safe to say that the "Globe" build will be sold at an early date. Furthermore, the trade requires just such tonnage, and manager Pankhurst is about level headed in putting up such craft, even if he went half a dozen better, for the Cleveland built tow-barges as well as steamers are always saleable.

Following the demand for new tonnage we find an order placed by the Interstate Transportation Co. with the American Steel Barge Co. for the construction of a steel tow-barge 390 feet long over all, with 44 feet beam and 26 feet molded depth, to be ready for business by the opening of navigation in 1897. The craft is not to be of the whaleback type, but as nearly as possible a duplicate of the Rockefeller barge James Nasmyth. She will have carrying capacity for 4,000 gross tons of iron ore.

Again, Buffalo is by no means going to be neglected, as it is now on the bill that the new steel barge for the Standard Oil Co. will be launched about Christmas, to make way for a new steel steamer for the Union Steamship Co. This steamer will be a duplicate of the Ramapo. The changes in the Owego and Chemung and the rebuilding of the New York and the Rochester, which have been definitely settled upon, ought to furnish business at the Union shipyard all winter. While

there is a possibility of some of this work going over another year, it is now expected that it will all be done before spring, unless it be that the steamer may not be finished till a little late in the season.

F. W. Wheeler & Co., of West Bay City, as well as Capt. James Davidson, are both busy and figuring well ahead on new tonnage, while the works of the Chicago Ship Building Co. are already assured of business enough for the winter. Taking it all round, lake shipyards will be kept quite busy during the close of navigation.

We may also announce that Arlington U. Betts, of Toledo, will build a steam yacht somewhere between 85 and 100 feet in length, flush decked, schooner rigged and fitted with triple expansion engines. Mr. Betts has not yet decided where he will build this handsome craft, but we might venture to guess that it is more than likely to go to the Craig Ship Building Co.

WEEKLY FREIGHT REPORT.

The freight market is not strengthening up as it should do and the figures quoted are little better than last week, except on coal, which commodity has somehow taken a splurge, as it should do, for the carrying of cargo at the ballast rates begin to make owners of vessels nearly tired.

During the week grain rates from Chicago have fluctuated from 2 cents on corn, back 1¾ cents, although the former figure now prevails, and 3¼ cents has been paid from Duluth, 4 cents to hold until spring and the market is much firmer at this writing.

Ore rates are practically quiet, and there is little or nothing doing, or rather the contract boats seem to have it all. Only 75 cents has been offered from Marquette.

In coal, we are pleased to advise of a slight advance during the week, to the head of the lakes, 50 cents; and Lake Michigan paying 60 cents.

THE CANADIAN MANUFACTURER.

(TORONTO, ONT.)

The editor is in receipt of a letter from Capt. John Swainson, editor of THE MARINE RECORD, Cleveland, Ohio, in which he says:

Permit me to congratulate you on the success of The Canadian Manufacturer under your excellent editorial management. The Manufacturer is always newsy, spicy and well edited, and among our most valued exchanges. The Canadian Manufacturer has done noble work for the industries of the Dominion during its career, and I sincerely trust that as we progress onward and upward it may be in the van in all industrial affairs.

Amid the turmoils and bustle of life it is exceedingly pleasant to encounter those who so considerately have kind words to say to a brother laborer.

NEW PUBLICATIONS.

There comes to our exchange table this week two new publications, "The Weekly Shipping Record," of New York, published on Wednesday's, and the "New York Nautical College Quarterly."

Let us say that the Shipping Record seems to supersede the old Maritime Register, or rather aspires to. It is a clean, smart paper and will no doubt obtain considerable support, especially as there are practical men working it, and they will, if possible, distance the Register in printing the latest and the best news that they can obtain.

The Nautical College Quarterly is published by Capt. Howard Patterson, who is principal of the college, and being kept up to the standard of the first issue is sure to gain a large circle of friends. We might also state that the publication offices of the Quarterly are at 130–132 Water street, New York, and no doubt a sample copy would be forwarded on due notice. One article the Quarterly has, which we have often dealt with, and would like to again quote, is as follows:

"It is not generally known that there is no law upon our statutes requiring masters and mates of American sailing vessels to possess certificates of competency. Any American citizen is eligible to command or officer one of our nation's vessels (from the coasting schooner to the clipper ship) without being obliged by law to pass even the shadow of an examination in order to prove professional fitness for the berth he signs to fill. In fact, it is well known that there are men who go to sea nominally as masters, but who carry an acting captain to handle and navigate the vessel. Such men generally ship as mate, with the understanding that they are to attend to the regular master's duties in addition to their own, and for such service are to receive compensation in the way of extra pay. These mates are known as 'nurses.' Isn't it about time that Uncle Sam treated himself to a few sensible laws regulating allow the occupant to sink or float as it o this evil?"

FLOTSAM, JETSAM AND LAGAN.

The following boats are laid up at Toledo: Oliver Mitchell, Schuette, Fred Kelly, Hopkins, Edward Kelly.

The Menominee and Marinette Vessel Loaders' Union have consolidated under one president, and the rate of 50 cents an hour will be maintained for the balance of the season.

Capt. Hagan, of the Majestic, has been compelled to leave his boat on account of sickness. Capt. Edward Thorpe, of the John Owen, now laid up at Detroit, will take charge of the Majestic for the remainder of the season.

Iron ore has been frozen in the cars at Ashland the past ten days, and great difficulty was experienced in loading it into vessels. Three engines by night and five by day have furnished the steam to thaw it out. Shipments from Ashland are fast closing, and it is only a question of a few days before ore shipments will cease entirely.

The report that the Union Steamboat Co. will cut down the speed of the Owego and Chemung to get more freight room, is confirmed by Manager Paine. Two of the six boilers will be taken out of each vessel this winter and the engines changed. The alterations will increase their carrying capacity by 400 or 500 tons.

The \$4,000 appropriated by Congress for the improvement of Oconto harbor has been expended, and a portion of the amount left over from a former appropriation, has also been paid out on recent improvements. Dredging has been in progress since the first of September, under the direction of G.C. Young, government inspector, and a channel 70 feet wide and 8 feet deep cut from the mouth of the river to Spies' mill; 48,000 yards of dredging have been removed.

The contractors who have been at work on the rebuilding of the government piers at South Haven, Mich., have discontinued work for the season. About 700 feet of new wooden work has been rebuilt, but there is a large amount of work yet uncompleted. It is expected that early next spring work will be commenced again and the piers extended into the lake 300 feet farther than at present, to prevent the forming of sand bars every time there is a storm. This will require an appropriation of \$30,000 to \$35,000.

David Mack, a retired shipbuilder of Essex, Conn., who has just celebrated his 90th birthday, vividly remembers a raid made by the British during the war of 1812, when boats from the fleet in Long Island Sound ascended the Connecticut River and burned the shipping at Essex. He picked up some hot spikes from the burning vessels and recalls the unpleasant sensations. Mr. Mack's wife died three years ago, after they had lived together for 67 years. The shippard in which he built about 100 vessels is now grown over with trees, and the channel in which they were launched has filled up.

The first of the two tugs building at Davidson's ship-yard, was successfully launched on Thursday last. The tug measures 90 feet keel, 20 feet beam and 10 feet depth of hold, fitted with fore and aft compound engines, steam steering gear, and all the modern improvements for general towing service. The engines, which were built by the Frontier Iron Works, of Detroit, have been shipped and will be placed in position this week. The second tug will be ready for launching in a few days, and will be a duplicate of the one already launched. On account of the lateness of the season the tugs will not be put in service until next spring, when they will be in shape for a general towing business on the bay and the lakes.

Once again has the American Line steamer Paris demonstrated the great value of twin-screw propulsion. On a previous occasion it was the efficient sub-division of the vessel, rendered possible by there being two distinct engine rooms, which was the main factor in obviating what would in all probability have been a disastrous loss of life. The latest mishap, the breaking of the starboard propeller shaft when only a few hundred miles on the eastward passage from New York, has shown the advantage of having more than one propeller, as by means of the port propeller an average speed of over 12 knots was made, a distance of about 2,700 miles being traversed after the breakdown of the starboard propeller, against very heavy gales and the high seas prevailing for a large portion of the time. Beyond three days' delay the passengers had suffered no inconvenience.

SALVAGE APPLIANCES.*

Whenever a large vessel was unfortunately sunk, as in the case of the Grosser Korfuerst and the Victoria, all kinds of wild schemes were propounded for the easy salvage of the vessels, no matter what the weight of the vessel might be or what depth of water it was lying in. In the case of the Victoria, sunk in 70 fathoms of water, it had been seriously suggested to freeze by chemical means the water inside her; and in the case of the Vanguard it had also been proposed to lift her by enveloping her in a huge canvas sheet and pumping air inside the vessel, thereby expelling the water and raising her to the surface.

Wreck raising might be classed under two heads, namely, theoretical and practical. Among the former was, first, the plan of lifting with air-bags placed inside the sunken vessel, which had been successful with a few small vessels, the Prince Consort, paddle steamer of 607 tons gross, sunk at Aberdeen, being the largest. The remainder of the vessels lifted in this way had not exceeded 200 tons, and many attempts had resulted in complete failure. The air-bag system would be an excellent one practically, if all vessels were empty or in ballast, which foundered in divable water, and the decks were built to withstand the strain necessary, and there tional movements, such as were set up by tides or currents, causing fatal injury to the air bags, to say nothing of the rapid deterioration of plant of this description.

Another plan which has been attempted was that of using cylindrical pontoons constructed for the purpose, sinking them to the bottom to lie alongside of the sunken vessel, and having attached the pontoons by chains or wires passing round the hull, the water was pumped out, thus giving bouyancy to the pontoons. This plan would be simple and perfect but for the fact that it was impossible for the divers to do a tithe of the work which this plan imposed upon them.

There were only two methods which had been found practicable, he said, namely, first pumping, and stanking and pumping, which might really be called one plan, as pumps were the main factors; the second, lifting by means of wire ropes and camels. The first of these plans could be and had been, very successfully applied; and excepting on the Thames, might be said to be the only way in which attempts were made to salve vessels of any size. The practice was, in the case of a sunken vessel with no great depth of water on her decks, for divers to carefully shore up her decks with stout timber, so that they would withstand the pressure of water from above when the water was pumped out from under them; all hatches and deck openings had to be carefully covered with strong canvas and planking, and holes were cut in the covers just large enough to allow suction pipes to pass into the ship, smaller pipes to admit air, and when all was ready with the pumps on vessels moored above the wreck, the water was pumped out. If everything held good, the vessel came up; but great care was required to prevent her capsizing when she began to lift. If the depth of water should be too great for the above method, the ship had to be stanked—that is to say, balks of timber had to be bolted or secured to her waterways, thick planks had to be fastened to the balks so that they came above water, then a platform or deck constructed across, and the whole made water-tight with canvas or oakum—the water pumped out, and the vessel, as she lifted, pulled into shallower water. In this way the Austral and Utopia had been salved, and it might be said to be the only practicable way in which very large steamers could be salved. Of course, it was a costly, risky, and tedious method, and though it was necessary for very large vessels, there was no necessity for applying it to smaller vessels—that is to say, for the vast majority of steamers or of sailing vessels, as vessels up to three or four thousand tons could more expeditiously and cheaply be raised by means of wire ropes and camels than by any other method, and that without the removal of cargoes. In the case of most other methods the cargoes had to be removed.

As regards the method of raising vessels by means of camels and wire ropes, he said that the method carried little or no element of chance with it, and the only difficulty was in getting the ropes under the vessel. He

*Abstract of a paper by Capt. James Bell, Assoc. I. N. A., read before Section G of the British Association for the Advancement of Science, at Liverpool, 1896.

thought, if this method was more generally employed, most of the sunken ships might be recovered, which would result in a saving to the owners and in many cases would serve to remove obstructions and dangers to shipping. He considered the system of removing dangerous sunken wrecks by means of explosives as barbarous. On the Thames this method was not, however, employed, pontoons being used instead. These pontoons were secured by wire hawsers to the sunken vessel at low water, and as the tide flowed the hawser took the the weight off the vessel, the pontoons sank to their displacement, and the cortege was towed to the most suitable place for beaching.

Something better than this plan has been a long-felt want, especially in places where the tidal range was small, or nearly absent, and in endeavoring to fulfill this requirement the author's appliances (the models of which were exhibited) had been devised.

THE WILHELM LIBELLED.

The steamer S. S. Wilhelm with two barges, having on board 750,000 feet of lumber from Duluth for the amount of \$750. The owner of the barge also asked \$250 as the amount he would lose by his lighter being laid up. Capt. McKenzie, of the Wilhelm, when the bill was presented to him, refused to pay it. An attachment was served on Capt. McKenzie and he secured the services of attorney W. A. Poucher and a bond in the sum of \$1,500 was given for the release of the boat. The bond was filed a few hours later. Altogether, Mr. Allen, the owner of the barge, claims \$1,000 damages.

PREVENTION OF BOILER INCRUSTATION.

An Austrian chemist recommends the following method for the prevention or removal of boiler incrustation, which has furnished remarkably good results during the year that it has been in use at Anina and other localities in Austria-Hungary. To the feed water there is added a mixture consisting of 90 per cent. of soluble chromates and 10 per cent. of soda. These salts transform the more or less soluble carbonates contained by the water into soluble chromates, which settle in the shape of slime without adhering to the walls of the boiler, and the latter can easily be cleaned by washing. The beneficial effect of the process will be felt even in the case of boilers which are already lined with thick layers of incrustation, for these will be gradually reduced and transformed into slime. On an average onetenth of an ounce of the mixture should be added to 35 cubic feet of water. For an ordinary boiler 3 to 4 oz. per day would be sufficient. Where water with very high lime contents is being used, the dose should be increased a little; the exact quantity needed can easily be determined by a preliminary test.

WORK AT THE YARDS OF THE AMERICAN STEEL BARGE CO.

In accordance with the promises made before election, we now find that the American Steel Barge Co. at Superior, Wis., are very busy at work and employing a large number of men.

Already barges 201 and 202 have been placed on the ways, divided, and sixty-one feet is being added to the length of the vessels, while still more work is being figured on.

The work of raising the two fore-mentioned vessels was done by a set of dry-dock boxes, owned by the Dredge Co. of W. Superior, and it was accomplished in eight days.

Capt. McDougall intends to give all the employment he possibly can to the men at the head of the lakes this winter, and it is safe to say that the works and shipyards of the American Steel Barge Co. will be kept hustling, so far as the best efforts of Capt. McDougall are concerned.

THE air-tight compartment theory of building ships was copied from a provision of nature shown in the case of the nautilus. The shell of this animal has 40 or 50 compartments into which air or water may be admitted to allow the occupant to sink or float as it pleases.

GEN. JAMES A. DUMONT.

Supervising Inspector General James A. Dumont, of the Steamboat Inspection Service, is the sixth person in the line of succession in that office, which was created February 28, 1871.

General Dumont was appointed to office by General Grant, November 24, 1876, and will therefore, during the present month of November, have held his position twenty years, whereas the average official life of his five predecessors was but thirteen months each.

He began his career in navigation on the Hudson River in 1837, as cook of the sloop Ranger, of Catskill, and has been connected with navigation interests ever since, both on steam and sail vessels, including six years' service on square-rigged vessels; during the latter service having sailed twice around the world, visiting the East Indies, Brazil, and nearly every port on the west coast of America, from Talcahuano, Chili, to San Francisco.

He has commanded both steam and sail vessels, amongst the former, the Illinois, Saratoga, General McDonald, General Wool, R. W. Carter and Croton, the Standard Oil Co., Oswego, arrived there last week. latter, while employed from March, 1862, to July, 1864, The steamer and her tow proceeded to the dock in the as a United States transport during the War of the new harbor. The lighter Buffalo was to be used in Rebellion, serving under General McClellan in the were no projections, such as bolts, beams, etc., or fric- transfering a portion of the lumber from the boats to Peninsular campaign, and under General Gilmore durthe dock. In placing the lighter in position the steam- ing his attack on Fort Sumter and Charleston, S. C. barge struck her, damaging her upper woodwork to the Previous to the war, was also general superintendent of the Griffith and Tillinghast Transportation Co., one of the largest transportation companies at Troy, N. Y.

General Dumont's success as an executive officer is probably best indicated in the following extracts from his annual report of 1892:

"In commending the present steamboat laws, it is not by any means the intention of this office to claim that they are altogether perfect; to make such claim would imply other than a human origin for them; but such imperfections as exist are simply those of detail only, and do not in any way impair their main purpose, namely, 'for the better security of life on board vessels propelled in whole, or in part, by steam,' a purpose, which the records show, they have ably accomplished."

"The present steamboat laws went into operation February 28, 1871, and, therefore, with the beginning of the present year, they have stood the test of twenty-one years.

"During that time the number of steamers inspected has increased from 3,102 inspected in 1870, under the law of 1852, with a total tonnage for that year of 942,272 gross tons, to 7,661 steamers inspected during the fiscal year ending June 30, 1892, with a total tonnage of 2,000-553.37 gross tons.

"During the nineteen years of the operation of the law of 1852, there were 1,504 disasters to steam vessels, with a loss of 9,320 lives, or an average per annum of 490 lives lost caused by such disasters.

"Whereas, notwithstanding the great increase in the number of vessels since 1870—over 100 per cent—there have been but 729 disasters to steam vessels, with a loss of but 5,057 lives, or an average of 240 per annum; the number of passengers carried per annum having increased from 122,589,130 carried in 1870, to not less than 650,000,000 carried in 1892. The average loss of life under the law of 1852, as obtained by dividing the number of passengers carried in 1870 by the average (490) number of lives lost for those years, was one person to every 250,181 passengers carried; while under the operation of the law of 1871 an average obtained by dividing the number of passengers carried in 1892 by the average (240) number of lives lost in the years covered by the latter law, gives only one life lost in each 2,708,333 passengers carried, or a reduction in the number of lives lost of nearly 11 to 1 in proportion to the number of passengers carried."

"Having made on a previous page of this report a comparative statement of the nineteen years' work of this service, under the law of August 30, 1852, as compared with the twenty-one years since, under the law of February 28, 1871, in the matter of protecting human life, it will, no doubt, be a gratification to know that the contingent expenditures producing these favorable results show that they have been obtained at much less cost than was the case formerly. For instance, in 1871 the contingent expenses of the service were \$41,873.67, and the number of steamers inspected was 3,297. Proportion of contingent expenses to each steamer inspected, \$12.70. Number of officers employed, 87. The present year the contingent expenses have been \$44,-378.94; number of steamers inspected, 7,661; proportion contingent expenses per each steamer inspected, \$5.79; number of officers employed in 1892, 122.

"The increase in number of steamers inspected in 1892 over 1871 is 132 per cent. The decrease in contingent expenses per vessel is 54 per cent, thus showing a comparative saving in contingent expenses for the current year, in the conduct of the service, exceeding the actual amount expended, namely, \$44,378.94.

TRIPLE-SCREW VESSELS.*

screw system is to be installed in all our new vessels each of 5,000 i. h. p., which can easily be installed under now building, on the battleships as well as on the the protective deck on account of their short but adecruisers. The French have also adopted this system to quate stroke, are besides preferable, because they do a greater extent in their new vessels, the Italians and not require such large castings or forgings as the Americans have it already in use, and now the Russians single powerful engine. The requisite soundness of are about to build triple screw vessels. Economic re- these parts, and, therefore, also their strength and ters of a million dollars, including interest. sults are, unfortunately, not to be obtained by the durability, can certainly be more readily detected for triple-screw system, as the Americans first found in the three small engines, and they can on this account Court of the United States, represented this country, their comparison of twin or triple-screw vessels, and as be put in with greater assurance. we have now seen in our thorough trials of the Kaiserin Augusta.

i. h. p., while the slip reached 32.5 per cent. This great sistance, and a further reduction in weight is effected. increase in the slip is the cause of the rise in the coal consumption at service (?) speed. When using the center screw alone, the coal per hour is 5,201 pounds, and with the two screws only it is 5,075 pounds. The loss, due to the resistance of the two uncoupled wing screws is thus shown to be greater than the advantage gained by the use of the center engine with full pressure over two equally large engines working at half pressure only.

For economy's sake it would, therefore, be better to steam such cruisers with two engines, instead of with only one, as is done for practical reasons. At the lowest speed, the slip of the center screw rises to nearly 40 per cent., and its use alone becomes more inefficient. If in spite of all this triple-screw vessels are building, there must be weighty reasons to justify such a course. This is, in fact, the case, and these reasons are, from the navigating, engineering and construction points of view, as follows:

The millitary or navigating reasons are that, as the blades of twin screws usually project far beyond the hull, these vessels cannot comfortably lie alongside of a dock or go through narrow gate docks, as the striking of the blades against the wall may easily happen. Besides, with these projecting screws, there is the danger that during an engagement, as, for instance, a mishap in ramming or running past too closely, a propeller blade may be broken off. The center propeller of a triple screw vessel is, however, so well protected that it is not exposed to any danger or damage. Experience has furthermore taught that twin-screw vessels, when one of the engines or propellers has been disabled by an accident, can only attain three quarters of their former greatest speed with the remaining engine, although the same full boiler power is available. But if a triple-screw vessel loses one propeller nearly ninetenths of the greatest obtainable speed with three screws can still be maintained with the remaining two screws. Besides, the triple-screw vessel will have greater handiness and manœuvering capabilities on account of the more favorable location of the rudder behind the center screw, an advantage of great importance in these days of fast steaming. In addition, a triple-screw vessel steaming with one engine needs only one-ninth of its total engineer force to run it in three watches. Should such a cruiser suddenly be required to go into action two-thirds of the engineer force, perfectly fresh and rested, would be available. This is a factor which cannot be too highly estimated, for the speed and manœuvering of the cruiser depend on it to a large degree.

The engineering reasons for the use of three screws may be summed up as follows: The extreme practical limit for the size of one engine may be placed at about 15,000 i. h. p. This engine, to run easily at the necessary high piston speed, must have a very long stroke. But a vertical engine of this description will be so high

that it will project far above the protective deck and Much interest will be felt in the fact that the triple- make protection impracticable. Three smaller engines,

Finally, the advantages in construction follow from that country. the fact that fast ships must have very fine lines aft, so The maximum performance with three screws was that the water may follow to the propellers with the 21.65 knots and 13,900 i. h. p., the slip of the middle least resistance. The engines can be installed better screw being 10.49 and of the side screws 13.8 per cent. in the sharp after-body of three-screw vessels than in With the center screw removed the i. h. p. was 8,822 similar twin-screw vessels, for there is still ample room and the speed 19.3 knots; the slip rose to 18.3 per cent. for the third engine in the narrow space abaft the other With the center screw replaced and then uncoupled the two engines. The whole machinery is moved further speed, with almost exactly the same i. h. p., a difference aft, and the shafts may be made shorter. In bad of only 1 i. h. p., was only 18.8 knots, or 1/2 knot less. weather the shafts are, therefore, subject to less bend-The slip was 19.4 per cent. After the two side screws, ing action than the long ones of twins-crew engines. had been removed, and with only the center engine The shafts need not, therefore, be made so strong, and working, a speed of 15.2 knots was obtained with 3,948 a saving of weight results. Finally, in the narrow vesi. h. p., the slip having now reached 28.4 per cent. The sels, the engine keelsons, to which the bed plates are the jurisdiction of the United States, as they were from side screws having been replaced and then uncoupled, secured, are closer together. The bed plates need not, 15 to 115 miles from shore. the speed was 14.6 knots, with practically the same therefore, be so strong, although offering the same re-

A NEW GEORGIAN BAY CHART.

A chart of the whole of Georgian Bay, embracing several seasons' observation work of Commander Boulton and Mr. Stewart, has just been issued by the British admiralty. It is very full and clear and will prove of great value to lake navigators.

DIVERTING TRADE.

It is stated that Western and Southern traffic lines are using all their efforts to divert grain traffic away from Chicago and the lakes, and to a large measure they are succeeding. The powerful Illinois Central is the principal road in this movement to build up an export trade through Galveston, New Orleans and other Southern ports. But the lake season is so near a close and the lake commerce is on such large proportions, that the effort has thus far been little felt.

ASHLAND SHIPMENTS OVER.

A special from Ashland says: The Central ore dock will be closed for the season as soon as four vessels now there have completed their cargoes. At the Northwestern half a dozen vessels will yet be loaded. The close of the season will see about 900,000 tons of ore shipped from the Central docks and about 650,000 tons by the Northwestern, making a total of about 1,550,000 tons, or over three-fourths of a million less than that of 1895, when Ashland shipped 2,350,000 tons.

REVENUE CUTTER'S MACHINERY TESTED.

Officials of the revenue cutter service are pleased with the showing made at the dock trial of the cutter Gresham at the yards of the Globe Iron Works Co. The report of the inspector states that the engines were started, about 6 o'clock in the morning, and kept running at various degrees of speed for the vessel of 16.7 knots, which is equal to that of any vessel on the lakes, except the North West and her twin sister, the North Land. The dock trial, which was practically the contractor's test of the machinery, disclosed no trouble of any kind, and indicated that the engines were to all intents and purposes perfect. In a short time the official trial will be made, and it is the expectation that several officials connected with the revenue cutter service will attend it.

Capt. Shoemaker, chief of the service, states that the plans and specifications for two new revenue cutters would be completed in three weeks, and that the contracts would be let some time early in January.

KIND WORDS FROM NEW YORK.

We find on the editorial page of the MARINE RECORD, of Cleveland, Ohio, that old familiar name, Capt. John Swainson, editor. This is as it should be and is positive evidence that THE MARINE RECORD will hereafter be written up in a strictly nautical manner when marine affairs will be discussed. We wish Capt. Swainson the success in the future that he achieved in the past .-Marine Journal, New York.

SEIZURE CLAIMS.

At an inquiry or court of arbritation, opened in Victoria, B. C., November 10, the amount of compensation, if any, to which the owners of the sealing vessels seized by the United States government for illicit sealing in the Bering Sea, between 1886 and 1890, was to be settled, and it is claimed that the amount is nearly three-quar-

Hon. William Putnam, Judge of the First Circuit and Canada by Justice King, of the Supreme Court of

The decision of these two gentlemen, so far as they shall be able to agree, will be accepted by the two governments as final, but should they disagree in any of the cases, an umpire will be appointed by the two governments jointly, or by the president of the Swiss confederation at their request.

. It is claimed that the Canadian side is a strong one, and it was presented by F. Peters, senior counsel for Canada, assisted by F. L. Beigne, of Montreal. Sir Charles H. Tupper and A. L. Bellier pleaded the cause of their clients before the tribunal. The Canadian government claim that the vessels seized were not in

The only plea by which the seizures can be justified would be that they were made within ten miles from shores owned by the United States, as it was decided by the Paris arbitration that the republic had no territorial jurisdiction over the Bering Sea and had no property rights over the seals not in American waters.

Americans contend that some of the claims are barred because the vessels seized were wholly, or in part, owned by their citizens, and that part of the damages claimed are in the nature of speculative profits, i. e., claims for catches which might have been made had the vessel continued her yoyage.

It seems that the controversy is now in a fair way to be settled once for all, and a source of great irritation and annoyance to both countries will thus be removed.

The agreement for the arbitration provides that "the amount awarded to Great Britain under this convention on account of any claimant, shall be paid by the government of the United States within six months after the amount thereof shall have been finally ascertained."

NAVAL ENGINEERS.

Engineer-in-Chief Melville warns Congress of the futility of building high-powered warships without providing the necessary skilled officials to drive and maintain them. In his annual report, after showing the enormous amount of work accomplished in the past year by his inadequate corps, he says:

"I feel that it is only necessary to direct your attention to the number of engineer officers who have been retired during the past year for physical incapacity, and to the steadily increasing number of such officers on the list, to demonstrate that the physical strain to which the engineers are subjected is too great. The personal element is one which must enter largely into the result of any naval engagement, and if we had the most powerful and swiftest navy afloat it would be valueless to use in time of war if we have not a sufficient number of trained men to see that the machinery of this fleet is in condition for action and to keep it going in action. The guns will be powerless without the machinery. It is one thing to design and build machinery, but quite a different thing to keep it in such condition that it may be ready to respond to the calls that may be made upon it under all conditions, and naval machinery is of such a character that it is only by the exercise of constant vigilance and the greatest care that it can be expected to be kept in readiness for such calls."

Commodore Melville also calls attention to the fact that our modern twin-screw ships have from three to four times as many moving parts as the engines in old ships, and that the auxiliary engine has multiplied from 10 to 20 fold, entailing increased care and attention for their preservation and increased cost for their repair and maintenance. Under proper conditions, economy and efficiency would result in keeping the best men steadily engaged. Commodore Melville recommends that the Boston yard, where excellent machinery is now used, should be made a repair station. He urges improved tools and boiler-making plants at League Island, Pennsylvania, and Mare Island, California, navy yards.

^{*}Opinion of Prof. Carl Busley, German Navy, in his paper on "Our Fleet," Zeitschrift des Vereines Deutscher Ingenieure, August 8, 1896.



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CAPT. M. J. Galvin, Supervising Inspector of the Ninth District, is one of the best supervisors that the United States Inspection Service has ever seen installed into office. It is noticeable that few complaints have been heard from Buffalo since the captain was appointed, and this fact alone shows the fitness of having marine men conduct affairs maritime.

An interesting scheme is being advocated by Reuben H. Plass, an inventor, of Brooklyn, to establish a line of buoys across the Atlantic, moored at intervals of a mile apart and lighted and equipped with automatic fog signals, etc. Each buoy would be large enough to prove a refuge for a shipwrecked crew, and all would be connected by telephone with life-saving crews equipped every few miles.

THE thanks of THE RECORD are due to the present Commissioner of Navigation, I. C. Chamberlain, for advanced proofs of his annual report relating to the marine progress of the United States. Commissioner Chamberlain certainly has advanced ideas relative to the upbuilding of the merchant marine of this country, and, perhaps they are right; but, we are pleased to differ with his notions, to a certain extent.

At the several ports where supervising and local inspectors of steamboats were formerly appointed at each change of the administration, we now find new and old candidates springing up for re-appointment. It should, however, be known that the local offices are under the civil service rules, and should therefore be competed for. In this connection we feel certain that no changes are desirable at this time. Otherwise, we would be pleased to so state.

THE revised international rules to prevent collisions at sea, drafted by the Washington International Marine Conference, will probably go into effect on the first of next July. The officers of the State and Treasury Departments have been working earnestly to this end since way still further increase the efficiency of the weather the adjournment of Congress, and Great Britain is co- service. When the weather service was first estaboperating with the United States in securing the assent lished skeptics were far more numerous than they are of the few remaining nations which have not yet accept- at present, owing to the incredulity developed by the ed the new rules. The following nations have agreed more frequent failures of prognostications. It was to adopt the rules and enforce them after July 1: Great natural for a captain who had lost a run through fear Britain, Germany, France, Denmark, Russia, Italy, aroused by a weather prediction to have less regard for Portugal, Austria, Belgium, Spain, Hawaii, Japan, the next warning signal, and to take the chances of his Mexico, Guatemala, Chiliand Honduras. These nations, own weather wisdom, or lack of wisdom. As the perwith the United States, control 22,000,000 tons, or more centage of verifications has increased there has been than five-sixths of the world's shipping. The important less scoffing at the forecasts, and now navigators as nations whose assents have not yet been received are well as agriculturists look to the weather report more Norway, Sweden, the Netherlands, Brazil and Turkey, eagerly than formerly. controling about 3,000,000 tons of shipping.

THE WAY TO FIGURE.

It is simply charming the way the Toledo Blade likes to figure on improbabilities, as for instance the fol lowing: "The old dream of recovering the gold held in solution in the waters of the sea is again revived. The gold is there without doubt; it ranges from a half to a grain per ton of sea-water.

"That is a very minute quantity, but figure on that basis, and the results are startling. A cubic mile of ocean has from 130 to 260 tons of pure gold in it-that is to say, \$65,000,000,000 to \$130,000,000,000 worth. As there are from 300 to 400 million cubic miles of water in the seas, there is, at the lowest estimate of a half grain per ton, \$35,000,000,000,000,000 of gold in the sea! This is a million times the wealth of the entire United States, and in fact the wealth of the world is insignificant beside it. But how to gather these riches of the sea-that is the question! The problem is a grand one, but who shall say it is too great for modern science, to grapple with?"

BUILDING CONTRACTS.

The lake dailies, copying from a local marine journal this week, give space to an article on demurrage, ignorantly assuming that the saving and binding clauses in a shipbuilding contract or an exception relative to when the amount charged for building should be paid the builder may be classed under the head of demurrage.

We have had occasion to point out several discrepancies of a similar nature within the past few weeks, yet it has been with some degree of reluctance on our part to do so. However, these misapplications of nautical terms grate harshly on those who happen to know what they are reading about, or even on the makeup of those who may have only a superficial knowledge of the subject.

A penalty attached to a shipbuilding contract made between an owner and builder, is not, nor can it, by any stretch of the imagination, be classed as a demurrage claim. Demurrage, pure and simple, is the compensation due to the shipowner from a charterer for unduly delaying his vessel in port beyond the time specified in the charter party or bill of lading. It is, in fact, an extended freight. A ship unjustly detained as a prize is entitled to demurrage. So also is a vessel chartered by any government. If not discharged at the time appointed, her owners collect demurrage per diem according to detention, and Sunday's delay is, or always, should be, collected on Saturday.

The foregoing shows that the bottom must be in actual service before there is any claim such as demurrage and a mass of metal, or timber on the stocks cannot enter into the claims of demurrage.

Let us hold terms nearly as they should be applied and not appropriate or misplace words that are strictly understood among the marine fraternity.

WEATHER REPORTS.

The annual report of the chief of the Weather Bureau just to hand sets forth the value of the forecast service to commerce and navigation. Chief Moore shows where lives and property were saved on the Great Lakes by forecasts of approaching storms; and makes the gratifying assertion that as a result of the display of danger signals warning navigators and others of the approach of the West India hurricane on the Atlantic coast, no lives were lost along the coast, and the loss to property was largely minimized.

The Weather Bureau's average percentage of verification during the year was 82.4, a gain of 2.4 per cent over the average of the year previous. This evident improvement in the service will serve to increase confidence in the forecasts of the observers, and in that

The review of the tornado record for the year, which

notes the sad as well as interesting fact that the tornadoes of the past year swept through populous sections, and caused unusually large loss of life, has some relation to the part of the report which deals with the kite experiments. Advanced weather scientists are of the opinion that an increase in knowledge of the temperatures and other conditions of the upper atmosphere will so ve the mystery of the development and progress of the tornado. The idea of carrying meteorological instruments to great heights by means of kites has been acted on with great success, and the chief states that on one occasion an altitude of 7,000 feet was attained. On the whole, however, the Weather Bureau does not require or deserve too much credit for its mistakes, nor should false prognostications become a by-word among those who are sailing as well as shore people.

AS FREQUENTLY pointed out in THE RECORD the absence of a distress signal is verified again this week by the ignorant or reckless use of signals of distress by the whaleback barge 127 when only a tug was wanted. This gave the life-saving crew a hard and perilous trip of four miles in the southwest gale all to no purpose. The barge was dropped by her steamer off the harbor, but tugs did not go out on account of the storm. Then the barge's crew began firing rockets. When the lifesavers reached her she was riding comfortably at anchor, where she remained until morning. Nor do we yet know what a danger or distress signal means, but the employes of the life-saving service ought to know something about it and not pull miles for a false alarm.

THE Union Dry-dock Co. has plans for a new 500-foot dry-dock, to be built alongside the other two dry-docks this winter. The company will also build another steamer for the Union Line, as a sister ship to the Ramapo. The Standard Oil Co.'s barge will be launched about Christmas. This, with the changes in the Chemung and Owego, and rebuilding of the New York and Rochester, will make business active at the company's yard during the winter and early spring months.

AND now Erastus Wiman, of the mercantile agency firm and fame, is about taking a hand in Erie canal affairs, and will, possibly later, endeavor to work the lake business.

AN IDEA OF OUR FOREIGN TRADE

The total exports of manufactures for September, as then announced, were \$21,684,784, as compared with like exports in September, 1895, amounting to only \$16,356,-346. The totals for the nine months ending with September were \$184,972,443 for 1896, against \$145,793,834 for 1895. The manufacturing exports for July, 1896, were \$21,553,500, and for August, \$21,147,206. The aggregate, therefore, for the first three months of the present fiscal year was more than \$64,000,000. If this rate of exportation should be continued through the remaining three-quarters of the year, the total for the fiscal year 1897 would be more than \$256,000,000. How these figures would compare with those for previous years is indicated by the following table, prepared by the Mercantile and Financial Times, New York, giving the exports of manufactures for representative fiscal years since 1859:

Expo	Total	
Year.	Value.	Total Exports.
1860	\$ 40,345,892	\$ 316,242,423
THE RESERVE OF THE PROPERTY OF	68,279,764	455,208,341
	102,856,015	823,949,353
1885	147,187,527	726,682,946
		845,293,828
		872,270,283
		1,015,832,011
	158,023,118	831,030,785
	183,728,898	793,392,599
	183,595,743	793,392,599
1896		882,519,229
	· · · · · · · · · · · · · · · · · · ·	

The figures for nine months ending with September show an increase in the exports of copper ingots of about \$10,326,000 for 1896 over 1895. The increase for the same period in refined mineral oil is about \$7,000,-000. The entire increase in manufacturing exports for nine months is \$39,000,000. It appears, therefore, that these two items represent considerably less than half of the increase during the present year.

RECEIPTS of ore at South Chicago to Nov. 1 footed up 1,193,687 gross tons, against 1,634,238 gross tons on the same date in 1895.

WIRE, WORK AND WEAR.

Practically speaking, and especially among the marine element, we are standing at the conflux of two agesthe age of iron and the age of steel, and the two are still striving for mastery, the old iron and the new steel. Steel has replaced iron in many departments of industry, and the battle will go on until the sphere of each has been definitely marked out according to its usefulness and special capabilities. Steel is an alloy of iron, and contains carbon and manganese, the former of which gives it the qualities of hardness, lightness and elasticity, while the latter element toughens it and neutralises the natural brittleness of the metal.

Hard, light, tough and elastic, steel is specially suited for the manufacture of wires. The amount of carbon present determines its fusibility, capabilty of tempering, standard of production that obtains in the famous Milland rate of rusting. Steel can be produced with four wall Works. The rigid adherence to excellence of in navigating the Mowatt to the canal, which point was times the strength of iron of a similar weight, and the quality and a like regard to principle in the execution reached at midnight. The tug Valerie steamed to the elastic sufficiency of steel may range as high as 75 per of all orders and contracts, explain the high standing cent. of its ultimate strength, while iron will begin to and wide reputation of the firm who have done so much permanently elongate at 40 per cent. of its ultimate to raise their industry to its present level. tensile resistance. These qualities render steel the best material for wire, and it is accordingly superseding iron in some branches of the wire industry.

Wire-making is a very ancient industry, and the use of several wires in combination is likewise of considerable antiquity. It seems that cold wire drawing by hand was practised in Germany in the fourteenth century, and this industry was introduced into England in 1565, when a certain S. C. Shultz and other foreigners came over and settled at Holywell. Later on the trade made its way into Yorkshire, Lancashire and Warwickshire, and in 1663 the first mechanical wire mill in that country was erected. Cast iron, the best material for wire for running ropes, was invented in 1750, and since 1800 the Warrington district has been prominently connected with the wire industry and its varied products.

The principle of the axiom, "In unity is strength," was early recognised in the wire industry, and attempts, more or less successful, have at various times been made to carry it out by uniting several wires together for the purpose of forming a rope to supersede hempen cables. The first wire ropes originated in Germany, and in 1820 were made on the "selvagee" system, i. e., a number of wires were laid parallel and bound together by a "serving" of fine wire. Ropes of this construction were used for the suspension bridges at Geneva and Freiburg in 1826. Obviously, however, they were useless for running purposes, since when once the fine "serving" was worn through by friction, the component wires of the rope would "brush out" and separate, thus destroying the strength and value of the rope, and illustrating the fable of the bundle of sticks with its moral, "United we stand, divided we fall." Again, splicing for repairs was out of the question; and, in addition to this, the ropes were too rigid, possessing little or no flexibility. But it must be said that the ultimate breaking strength of the selvagee rope approximate very closely to the aggregate tensile strength of the component wires, separately considered; and, therefore, selvagee ropes are still used in some cases where there is no friction to be apprehended, and an appropriate example of this is found in its application to the famous Brooklyn Bridge at New York.

was solved by the inventor of the "strand" system, but who that inventor was is not definitely known, as the honor has been variously claimed. Those who take somewhat improved rates for return cargoes. There pride in the priority of English industries, claim Mr. J. has likewise been some better demand for prompt vessels Huron because of Supt. Kimball's decision to locate the B. Wilson, of Derby, to have made stranded wire ropes for general cargo at former figures, while vessels to as early as 1832 for the Haydock collieries in Lanca- arrive for this business are neglected, charterers havshire. Germany, not to be out of it, claims that in 1834 ing evidently supplied their wants for some months to pany. The company is to build its line up to the station. Professor Albert, of Clausthal, made some stranded come. Vessels are in moderate request for lumber from At that point there is 16 inches to 3 feet of water for wire ropes for use in the Hartz mines. The manufac- Gulf ports to the River Plate at \$12 clean charter. The about 200 feet out from the shore. As the lifeboats ture was introduced into England in 1838. At first, iron financial troubles in the Brazils have momentarily draw three feet it would be a hard matter to launch a wire was used, but that has now been superseded by stopped engagements in that direction. Tonnage for boat in a heavy sea. The proper place for the station is steel; also, at first, the ropes were made by hand on a naval stores is still in moderate request at rates last at a point about five miles above Fort Gratiot light. rope walk, like the hempen goods, but later on by conceded. machinery, the first machine being patented in 1840. The difference between the early wire ropes and those of to-day, is that the first ropes were crudely manufactured and ill-proportioned, subject to irregularities, uncertain and unsatisfactory; but by the definite experience since gained rules of precision have been established, which, in conjunction with care and judgment in the selection of the wires, have secured uniformity of proportion in the lay of the strand and ropes.

Messrs. Bullivants, of London, procure the necessary

wire from their steel wire works, where it is made by rolling down heated bars of metal into rods about 1/4inch in diameter, which are then further attenuated by being drawn in a cold state, with the assistance of soaps and grease, through a series of circular holes of regularly diminishing sizes in metal plates. The first process the wire undergoes in rope-making, after being tested to ensure fitness, is galvanizing. This is done by cleaning it in an acid bath, and then passing it through a bath of molten zinc, whence it passes through a sand bath or bed of asbestos.

tical use, to the most thorough and searching tests, it and the steamer was allowed to drift away. The Portwould seem that Messrs. Bullivant & Co.'s wire ropes invariably come out right, thus testifying to the high

LARGE LAKE CARGOES.

The Bessemer Line steamer Sir William Siemens cleared from Duluth on Sunday with 177,000 bushels of wheat, equal to 5,370 net tons, which eclipsed the previous record-breaking cargo of the s'eamer Queen City 40 tons. But if the report is correct the steamer W. D. Rees, of the Wilson Transit Line, left Duluth on Saturday with 130,000 bushels of wheat and 70,000 bushels of barley, or 5,580 net tons, then the latter vessel bears the palm with a cargo 210 net tons greater than that of the Siemens.

The steel barge Aurania, owned by John Corrigan, of Cleveland, arrived at Buffalo last Wednesday and on the same day the vessel was reported at the Buffalo custom house as clearing with 5,200 tons of coal. If the cargo of 5,200 tons of coal has been taken on, it will exceed any vessel's cargo taken out of Buffalo by over 900 tons. However, it is now reported that the Hartnell, loading 4,777 net tons, has broken the Aurania's record by 23 tons, so it would appear that the Aurania was not loaded to the extent or credit given. The steamer Queen City also loaded a cargo of grain at Duluth this week of 156,256 bushels of barley and 58,000 bushels of wheat, equaling 5, 190 net tons.

THE EASTERN FREIGHT MARKET.

According to the regular circular issued by Funch, Edye & Co., New York, there is still a demand for some tonnage affording November shipment, and a rate quite out of proportion to those for later shipment may be obtained for suitable boats. For December, steamers are offering freely at 3s. 6d. from range for picked ports. Cotton freights are quiet and little doing in view of the relatively higher price at which the article is being held here than in Europe. There is little inquiry for steamers to carry case oil for the far East, charterers in this branch having likewise temporarily withdrawn. The cargo of grain purchased for Bombay has been arranged for December loading, but with the option of discharging it at a port in the United Kingdom.

Business for sail tonnage has been most active during The puzzle of producing a strong, flexible wire rope the week just passed. A number of vessels have accepted case oil freights at a slight reduction from previous figures, in evident expectation of meeting with VERMILLION HARROR. -- Storier weath

> at the opening there will be large amounts awaiting boats, no matter what the general level may be. shipment.

LOSS OF THE ARNOLD.

The steamer B. W. Arnold, which had in tow the barge Sumatra when the latter foundered off Milwaukee harbor with the loss of four lives, lies upon the beach near Salmon Trout River, Lake Superior, a total loss. The Arnold was bound from Duluth for Chicago with 800,000 feet of lumber, and had in tow the barge James Mowatt, also lumber laden. About noon on Saturday, off Ontonagon, fire broke out in the deck load forward, and despite every effort to check it spread the entire length of the steamer, compelling the crew to take Though subjected, both in preparation and in prac- refuge on the Mowatt, after which the towline was cut age Lake life savers reached the burning craft at 5:30 p. m., after having rowed a distance of fifteen miles, and finding that they could do nothing better assisted burning craft from Houghton with the intention of towing her to a point where a more effectual fight might be made against the flames, but a line could not be run on account of the heat. Hence the Arnold continued to drift before the wind, a burning mass which lighted Lake Superior for miles, until she fetched up on the bottom near Salmon Trout River, and there was slowly consumed to the water's edge.

Insurance on the Arnold to the extent of about \$13,000 was carried in the agencies of Worthington & Sill, of Buffalo, and C. A. McDonald & Co., of Chicago. The remainder, about \$25,000, was placed with what is known as the Port Huron pool, made up of vessel owners at that point.

The B. W. Arnold was built at West Bay City by F. W. Wheeler in 1885 for the Mills Transportation Co., of Marysville, Mich., the present owners. Her net tonnage was 674, rating A1*, and she carried an Inland Lloyds valuation of \$50,000.

KICKS FROM PORT HURON.

To the Editor of The Marine Record:

PORT HURON, MICH., Nov. 23.

Since the life-saving station has been located there has been a great deal of kicking as to the location. Now, why not let it go and say no more, even if the street car company has got the location where they want it. It is not for the sailors' benefit but for the interest of land owners and railroads to gobble up everything that comes up for the benefit of shipping. The proper place for that station is on the light-house reserve. I think "Mariner" in the Detroit Free Press has a share in a very nice location. Now keep right on kicking and the station will go to Lexington or where Billie Bryan has gone, up Salt River. -JACK.

The story that the new life-saving station at this point is to be erected at the upper end of Gratiot beach for the benefit of the street railroad company, and that the land whereon it is to be built was donated to the government by the street railroad people, is entirely without foundation. The point where the station is to be located, is, in the opinion of many mariners, the most suitable for that purpose in this vicinity, and was chosen for that reason by Supt. Kimball.

The land was donated to the government by A. D. Bennett and Marcus Young, neither of whom have any connection with the street railway company. * These terms: I mey

There is a big kick among the marine men at Port new life-saving station just above Katahdin beach on two lots given to the government by the street car com-It was at this point that the schooners Meisel, Tilden and Shupe went ashore, when four of the volunteer crew THOUGH navigation at the head of the lakes is practic- lost their lives in trying to rescue the crew of the Shupe. ally ended, the sales of lumber in that region are larger It is the opinion of every body except the stockholders now than at any other time this year. Since the elec- of the street car line that the station should go farther tion 10,000,000 feet have been disposed of, and the most up the shore. The superintendent can do the right of it has been shipped. The shippers have become thing by the sailors by building his station at the point greatly encouraged over the outlook, and they predict I have named on a piece of land that juts away out in that the improvement will continue all winter and that the lake, giving plenty of water for the handling of the

MARINER.

SCOTT'S NEW 1896 COAST PILOT

FOR THE LAKES PRICE \$1.50.

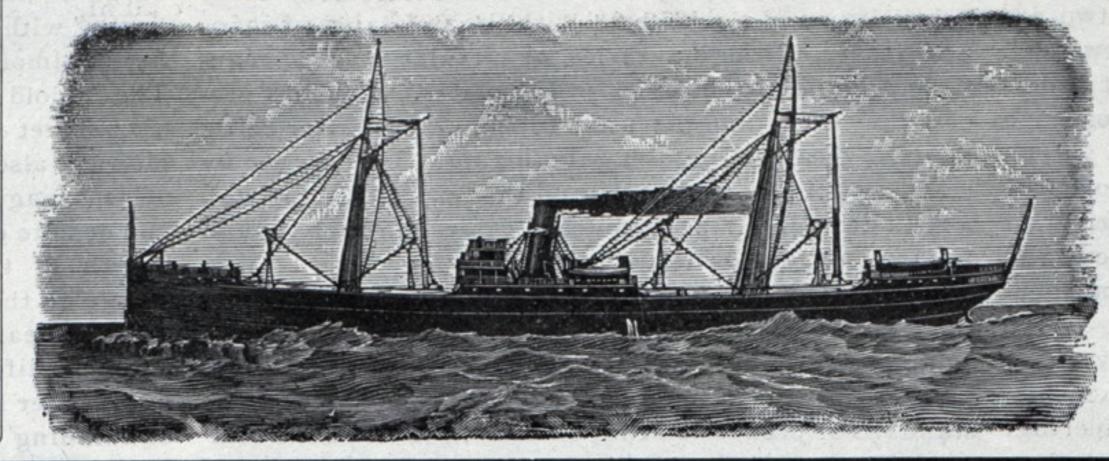
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The profits of the Company revert to the assured, and are divided annually upon the premiums terminated during the year; thereby reducing the cost of insurance. For such dividends, certificates are issued bearing interest until ordered to be redeemed, in accordance with the charter.

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GORRESPONDENGE.

opinions expressed by our correspondents. It is our desire that all sides of any question affecting the interests or welfare of the lake marine should be fairly represented in The Marine Record.

SCREW PROPELLER DESIGNING.

To the Editor of The Marine Record:

2 Powis Place, Queen Square, London, W. C.) November, 14, 1896.

My letter of September 6 was written with the sole object of correcting an error in a published book, and I am at a loss to understand what Mr. Gray, whose letter you print in yours of October 22nd, has to do with it. That letter, however, is easily disposed of.

Mr. Gray first says that it is not possible to invent a formula for designing propellers, and he then says this has been done by a firm, whose work he eulogises.

But he does not tell us that he is the London agent or salesman for this firm. That, however, is the case; and it at once lowers what appears to be impartial praise to mere advertising declaration.

Immediately my invention was announced over four years ago, a host of imitators sprang up (as is always the case) professing to be able to design a perfect propeller, and they advertised in these terms. I never needed to advertise; my success was my advertisement, and that reminds me of what Dickens wrote: "If a man would commit an inexpiable offence against any society, let him be successful." Yours faithfully,

C. PURCELL TAYLOR.

CIRCULAR LETTER.

To the Editor of The Marine Record:

234 LA SALLE ST., CHICAGO, Nov. 2, 1896.

The undersigned have this day formed a co-partnership under the firm name of Sickel Bros. for the transaction of business as steamship and insurance agents, with offices at the above address and a branch office at 307 Pine St., St. Louis, Mo., under the management of Mr. T. O. Martin.

Both of the undersigned have been associated with the Atlantic Transport Line and Lord Line for eleven years, and with the Hamburg-American Line for nearly seven years. Besides other interests, we retain the representation as general Western freight agents of Atlantic Transport Line, Lord Line, National Line,

Bristol Channel Line, Hamburg-American Line, Scandia Line and Empire Line. We have also been appointed Western managers for the well-known insurance firm of Johnson & Higgins, head offices 69 Wall St., N. Y.

RIVER AND HARBOR WORK.

Lieut. Col. Jared A. Smith's monthly report of the operations on the lower Lake Erie harbors has been forwarded to the War Department. It covers the month of October. At many of the harbors in Col. Smith's district the work has been pushed rapidly on account of the near approach of winter, when operations will necessarily have to cease. Following is a synopsis of the work:

CLEVELAND HARBOR.—Repairs to the breakwater were continued by an inspector and a small force of men. Sheathing plank on the east breakwater were replaced, piles were driven and capped, and the space enclosed was filled with stone. The work of decking the crib with timber and placing blocks around the edges of the crib was completed. The contract work is being continued this month.

Toledo Harbor.—Dredges removed 18,258 yards of material from the "outer section" and 5,365 yards from the "inner section."

Sandusky Harbor.—Dredging was done as follows: Upper end of the dock channel, 11,959 yards; widening entrance to the straight channel to the dock channel, 3,232 yards; outer bar, 1,253 yards. Fifty-one boulders were removed from the channel by dynamite. The work of constructing the jetty was continued throughout the month and a portion of it was completed.

HURON HARBOR.—A small force of men continued the work of re-constructing a part of the old west pier. A timber crib 180 feet long and 20 courses high was made ready to sink.

VERMILLION HARBOR.—Stormy weather interfered with the work of removing and rebuilding the pier. But good results were nevertheless accomplished.

BLACK RIVER HARBOR.—Dredges removed 8,171 yards of material from the channel.

FAIRPORT HARBOR.—From the bar at the entrance to the piers, 22,015 yards of material were removed by dredges, but bad weather interfered with the work.

ASHTABULA HARBOR.—The work of excavating rock from the channel was continued, 5,200 yards being taken out.

VISIBLE SUPPLY OF GRAIN.

As compiled for THE MARINE RECORD by George F. Stone, Secretary Chicago Board of Trade, November 21, 1896:

CITIES WHERE STORED.	WHEAT. Bushels.	Bushels.	Bushels.	Bushels.	BARLEY. Bushels.
Albany	504,000 1,764,000	50,000 1,340.000 351 000	110,000 1,762,000 125,000	187,000	22,000
Buffalo, afloat	1.998,000		608,000	172,000	967,000
Chicago	15,044,000	5,106,000	3,107,000	868,000	350,000
Cincinnati	1,000 469,000	4 000 23,000	14,000 63,000	5 000 32,000	60,000 34,000
Duluth and Superior afloat		2,000	409,000	357,000	706,000
Indianapolis	163,000	142.000	10.10.44		· Andrew
Kansas City Milwaukee	464,000 391,000	39,000 3,000	155,000 6,000	6,000 112 000	91,000
Minneapolis Montreal	18,498,000 632.000	9,000 42,000	224.000 115,000		26,000
New York afloat	8,083.000 104,000	6,126,000 26,000		13,000 469,000	38,000 1,523,000 97,000
Oswego Peoria Philadelphia	202,000 667.000	122 ,000 1,244.000	THE RESERVE OF THE PARTY OF THE	7.000	160,000 16,090
St. Louis	2,798,000	229,000	218,000 94,000	59,000	7,000
Toledo afloat	943,000	218,000	454,000	97,000	Hitelie.
Toronto On Canal	236,000 560,000	542,000	61.000 172.000	132,000	104,000
On Lakes, On Mississippi	2.560,000	1,586,000 200,000	478.000 8.000	125,000	728.000 1,214,000
Grand Total Corresponding date	59,971.000	18,150,000	12,208,000	2,657,900	6,146,000
1895	62,221,000	4,642 000	6,055.000	1,382,000	4,957,000

DURING President-elect McKinley's fourteen years in Congress, from 1877 to 1891, he with Mrs. McKinley occupied rooms in the Ebbitt House. In fact the Ebbitt House was practically their home for this long period of time, and Mr. E. Platt Stratton, now chief engineer surveyor for the American Shipmasters' Association, publishing the Record of American and Foreign Shipping in New York, was quite a frequent visitor of the Major's and a strong political adherent of his. In referring to the foregoing, Manager Burch, of the Ebbitt House, said: "It seems impossible to realize that it's nearly twenty years since Major McKinley came to Washington and made his home with us. But it was in 1877 that we assigned him the suite of rooms that he and Mrs. McKinley occupied continuously till 1890. They became so thoroughly identified with the place, and Mr. McKinley's form and face so well known to the frequenters of the house that we all ceased to look on him as a guest and thought of him and his wife as 'home folks."

THE ZAMANAP.

INVENTED AND MANUFACTURED BY SIR C. PURCELL TAYLOR, BART., D. SC.

This is an instrument for measuring minute intervals of time, and also for recording with perfect exactitude the time at which any occurrence took place. The name is derived from the Sanscrit, following the custom which the inventor introduced some years ago, since the Greek language can no longer supply derivatives.

The Zamanap is the result of some eight years' experiment, and has only been arrived at after very expensive trials and the rejection of many machines that were almost perfect.

It may be mooved about with facility, for it weighs nap, they have always been found in error. only a few pounds, and is so constructed that it will In the Zamanap the prime endeavor was to operate even when in violent motion.

It may be used for all purposes requiring exact complished, the division measurements of time, whether over short or long portions was perfected. For the first time in

Its chief uses are:-

1. Determining the speed of fast vessels, particularly second; at least, so says the inventor. torpedo boats and destroyers, and also locomotives.

2. Recording astronomical observations with absolute accuracy.

3. Determining and recording the results of races and

other sports.

4. Determining velocities of launches of ships.

5. Determining the speed, resistance, propeller efficiency, etc., of models of ships in experimental tanks.
6. Photographing projectiles in their flight.

7. Determining the velocity of projectiles, and the strength of explosives.

When employed for this last purpose, it will take several velocities during the flight of each shot, say at the muzzle and at 10, 20, 30, 100, 500 and 1,000 yards, or any other distance; and this is done without any previous or subsequent preparation or adjustment. The Zamanap once set in action will go on registering these velocities as long as the gun is fired. If 2,000 bullets per minute are discharged, and the Zamanap is arranged to take velocity at eight points in the trajectory, sixteen thousand observations of velocity will be recorded in one minute. Hitherto, it has been possible only to take velocity at two points in the trajectory, and even then half an hour's preparation was necessary.

Zamanap will take 16,000 in a minute.

When required for determining the velocity of projectiles, another piece of apparatus is supplied which does away with the screens formerly in use. This apparatus is always ready, never requiring adjustment before or after the shot; so that instead of having to send a man down the range at every shot to re-adjust the screen, the gun may be fired continuously. The price is £5 for every point of observation, which may

To take 20 velocities in a day was good work, but the

be of any number and at any distance from the gun.

Former chronographs were of considerable size, and required a large number of battery cells to actuate them, thus necessitating the building of one or two substantial houses to contain them.

The Zamanap is so compact that it will go into a hat, and requires only two or three small cells.

In most chronographs, the actual measurement of time must be made independently; in a word, they are not strictly chronographs at all, for they do not write down the time, but merely record the observation, leaving time to be measured in some other way. In the Zamanap, however, both are accomplished together.

In all chronographs hitherto in use, there has been no means of checking their exactitude or of ascertaining their correctness of measurement, i. e., many of them profess to measure to $\frac{1}{10,000}$ or even $\frac{1}{100,000}$ of a second, but there is no means of determining the duration of that second, and when tested against the Zamanap, they have always been found in error.

In the Zamanap the prime endeavor was to ensure accuracy in measuring the seconds. When that was accomplished, the division of the second into ten thousand portions was perfected.

For the first time in the history of chronometry we have an exact second, and the exact subdivision of the second; at least, so says the inventor.

MARITIME LAW.

THE RANGER-BROWN V. THE RANGER. District Court E. D. New York. June 10, 1896.

SALVAGE SERVICE—Compensation.—The services of a steamboat engaged in the menhaden fishery, in going to the assistance of a similar steamboat stranded on the Brigantine Shoal, lying by her all night, and pulling her off next morning, with the assistance of another vessel, at considerable risk and peril, held to have been a salvage service, for which \$1,750 should be allowed on a valuation of \$9,000, the salving vessel also being worth about \$9,000.

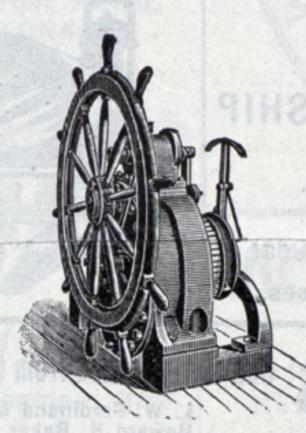
This was a libel in rem by Samuel S. Brown against the steamboat Ranger, to recover compensation for salvage service.

Benedict, District Judge. This is an action by the owners of the steam fishing boat E. S. Allen to recover salvage compensation for services rendered in July, 1894, to the fishing steamboat Ranger. The Ranger was a steamboat engaged in menhaden fishery, and on the 13th day of July, 1894, she got ashore on the Brigantine shoal, perhaps the most dangerous shoal on the Jersey coast. Her position was one of extreme peril, and there is little reason to doubt that if she had not received assistance she would have become a total loss. The Allen was a steamboat also engaged in menhaden fishery, and was lying, with two or three other fishing steamboats, some two miles off. These boats refused to go to the assistance of the Ranger on account of the risk. The Allen, however, concluded to run the risk, and proceeded to the Ranger for the purpose of getting her off. On arriving at the Ranger the tide had fallen two or three

feet, and nothing could be done that night. At the request of the master of the Ranger the Allen lay by her all night, and the next morning at dawn she began to pull at the Ranger. After continued exertions, aided for the latter part of the time by another boat (which boat, it is stated, has been settled with for her services), she succeeded in getting the Ranger off and taking her to New York in safety. The service was rendered not without considerable risk, and the peril to which the Ranger was exposed was extreme. The value of the Allen is agreed to be \$9,000. The value of the Ranger is about the same. Clearly, the service was a salvage service, and entitled to salvage compensation. The only question is the proper salvage compensation to be paid for the services. Upon the evidence it is my opinion that a proper salvage compensation for the services rendered by the Allen would be \$1,750, for which sum, with costs, let a decree be entered.

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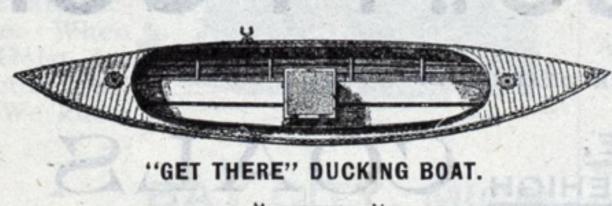
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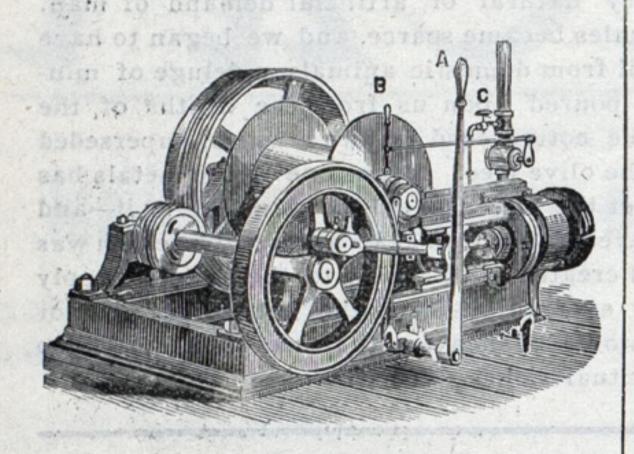
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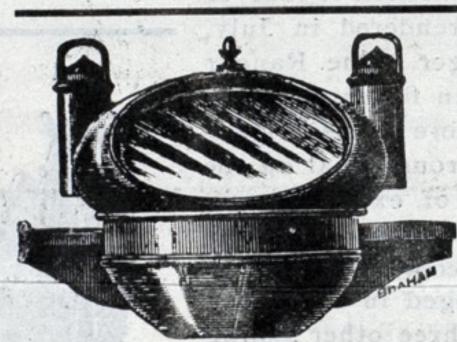
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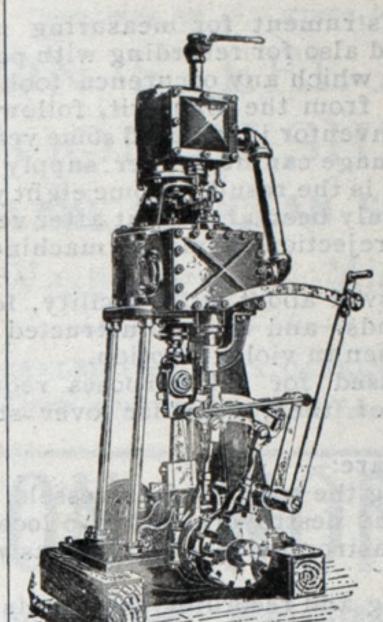
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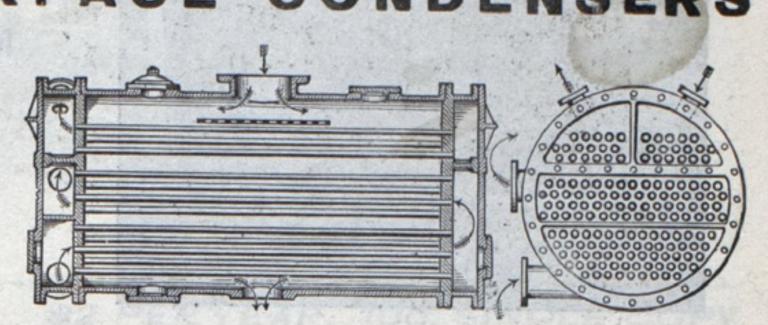
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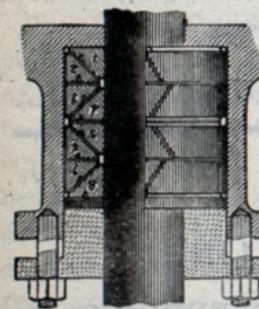
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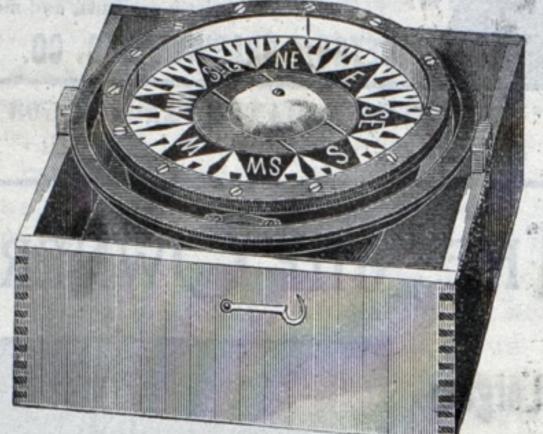
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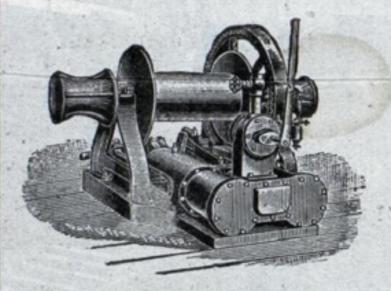
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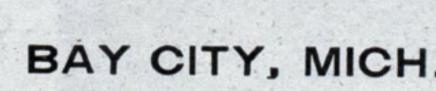
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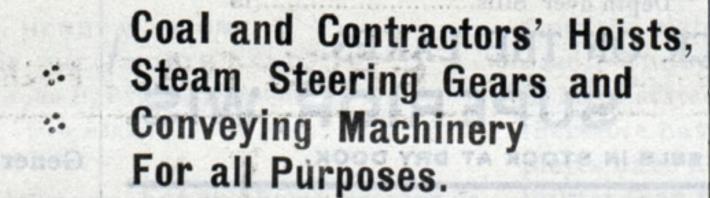
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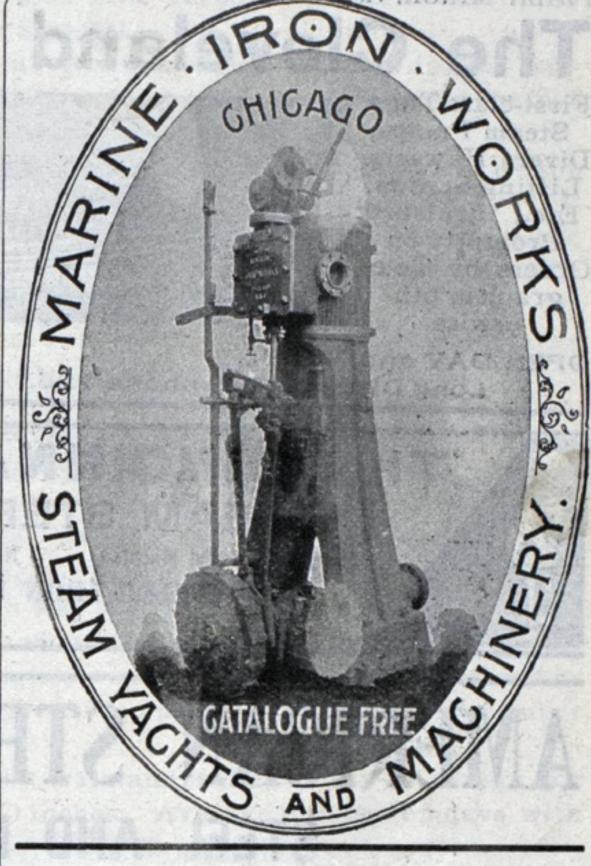


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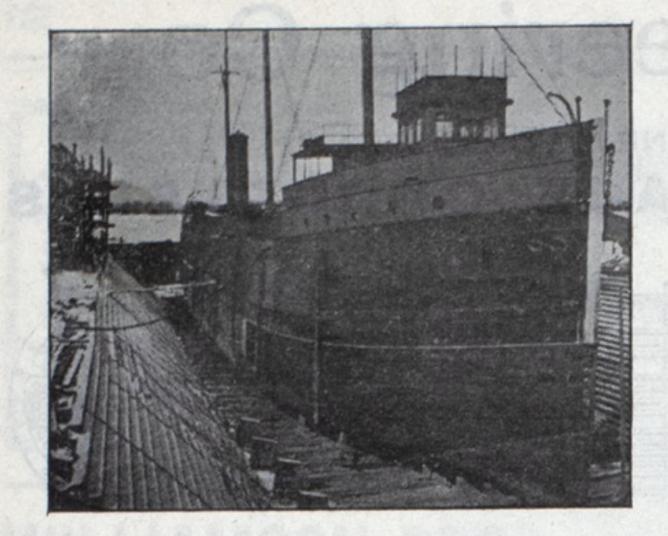
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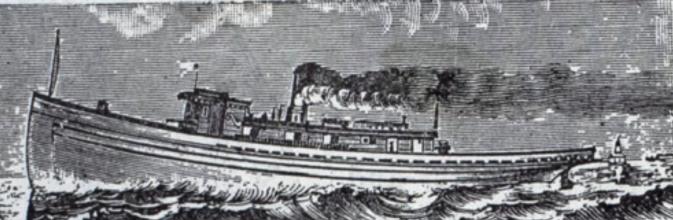
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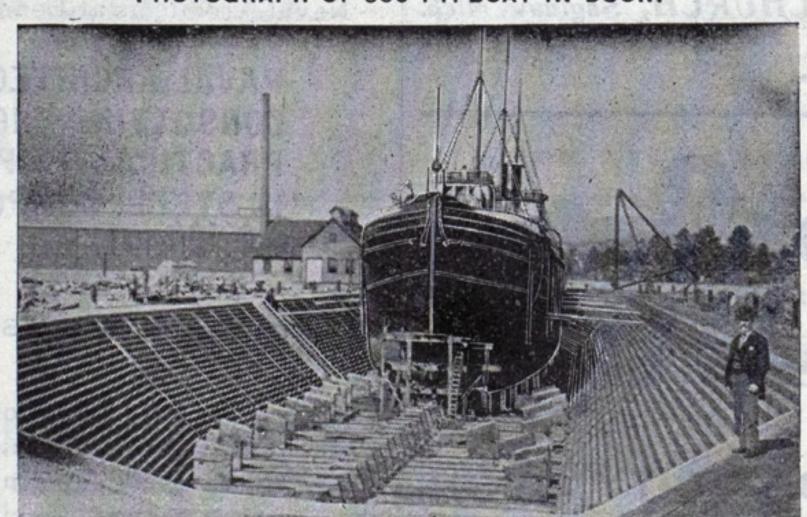
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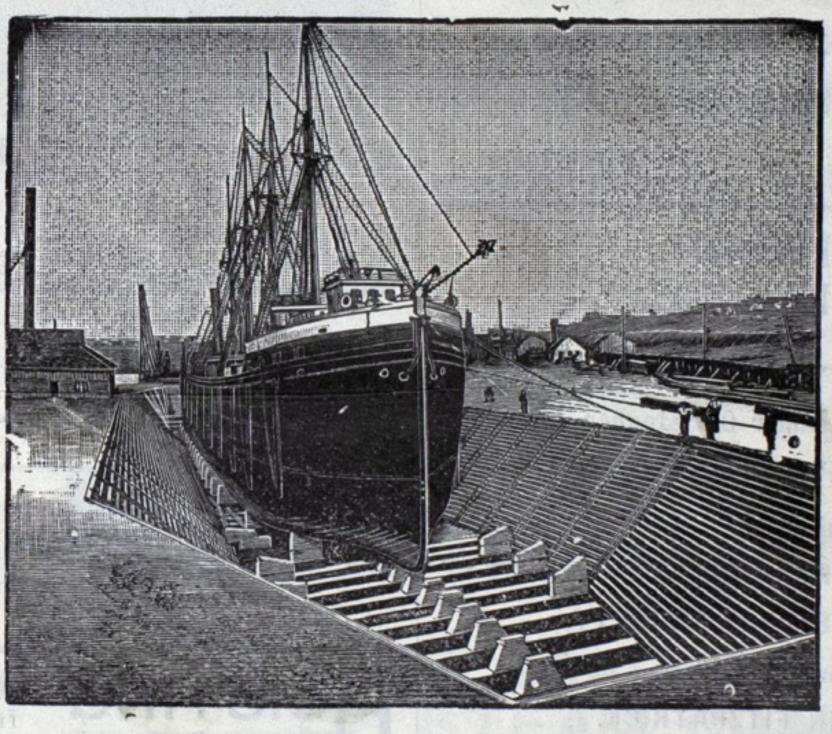
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